RECLAMATION

Managing Water in the West

Environmental Assessment – Expansion of the Sacramento Valley Accelerated Water Transfer Program

Mid-Pacific Region

U.S. Department of the Interior
Bureau of Reclamation

July 2008

Contents

Introduction

The Bureau of Reclamation proposes a limited expansion of the accelerated process under which the types of water transfers or exchanges that occurred in the Sacramento Valley prior to the Central Valley Project Improvement Act (CVPIA), as well as other transfers and exchanges that comply with Section 3405, are approved in an expedited manner.

This limited program is a modification of the June 2008 proposal, which simply proposed to double the volume that might be transferred in dry years. This limited program narrows the coverage proposed in the June 2008 proposal to transfers which do not involve actions that may affect listed species, particularly the federally-listed giant garter snake (GGS). This limited program will otherwise be identical to the June 2008 proposal for expansion of the accelerated process. In practice, this means that transferred water must come from sources that do not involve reductions in water applied to rice fields.

This EA evaluates a required approval process for CVPIA transfers or exchanges for the 2008 through 2009 water years between Central Valley Project (CVP) contractors within the Sacramento Valley. (A contract year begins March 1 and ends the last day of February of the following calendar year.) Each proposed transfer or exchange would be reviewed by the Contracting Officer for consistency with this EA and with all applicable permits, laws, and regulations. Each proposed transfer or exchange, when acknowledged, would transpire beginning at the date of approval and ending no later than the last day of February of the following calendar year.

The study area encompasses the service areas of these contractors and adjoining lands and streams in the core of the Sacramento Valley that might be affected by the proposed action.

Purpose and Need

The accelerated water transfer program (AWTP) is needed to facilitate efficient water management through water transfers or exchanges for small, urgently needed quantities of water between CVP contractors in the Sacramento Valley. This includes transfers or exchanges of water between the Corning Canal and the Tehama-Colusa Canal contractors, Sacramento River Settlement Contractors, the Colusa Drain Mutual Water Company, and the Sacramento, Delevan, and Colusa National Wildlife Refuges (Refuges).

CVP contractors within the Sacramento Valley frequently need to transfer or exchange CVP water supplies to meet irrigation (agriculture) demand, or incidental municipal and industrial (M&I) use, or to meet the full habitat development needs for the Refuges pursuant to Section 3406(d), P.L. 102-575, of the CVPIA. The need for these agricultural transfers, being driven by variations in weather and time-sensitive needs of crops, typically arise on short notice and require fast action to avoid economic hardships. For example, entire crops of early tomatoes and olives can be lost in a day's time if water is short and hot, drying winds are present. Agricultural to urban transfers, which are typically of much greater magnitude, tend to have longer lead times and are not contemplated under this EA. This program is needed even in normal years and particularly in drought years as the volume of water to be transferred tends to rise sharply. Reclamation is, therefore, proposing to enlarge the cumulative volume of transfers allowable in drought years from 75,000 af to 150,000 af to accommodate the exception need of drought years.

Alternatives

Expand the Sacramento Valley Accelerated Water Transfer Program (Reclamation's Proposed Action)

The proposed action would be the same as the present AWTP, except for its expansion in drought years to a cumulative volume of 150,000 af per year from the current 75,000 af of water and its restriction to the transfers that have no potential to affect GGS. The program would otherwise remain unchanged.

CVP contractors in the Sacramento Valley would be allowed to transfer or exchange up to an aggregate of 150,000 af of CVP contract supply each year in addition to transfers or exchanges between Federal Refuges or other fish and wildlife projects and facilities. These transfer(s) or exchange(s) would be monitored and an annual summary of each year's cumulative transfer activity prepared. Therefore, the totals will be up to 150,000 af, plus whatever quantity the Federal Refuges supplied with CVP water choose to transfer from CVP contractors or to exchange between themselves.

Authorizations

The AWTP is authorized pursuant to the following contracting authorities and guidelines, as amended and updated and/or superseded:

- Title XXXIV of the CVPIA of October 30, 1992, Section 3405.
- Reclamation Reform Act, October 12, 1982, Section 226 (RRA).

- Long-Term Renewal Water Service Contracts for the Tehama-Colusa Canal and Corning Canal Contractors.

- Sacramento River Settlement Renewal Contracts.

- Long-Term Renewal Contract for the Colusa Drain Mutual Water Company.

- Water Service Contract with the U.S. Fish and Wildlife Service.

- Reclamation's Interim Guidelines for Implementation of Water Transfers Under Title XXXIV of Public Law 102-575, February 25, 1993.

- Reclamation and U.S. Fish and Wildlife Region 1, Final Administrative Proposal on Water Transfers, April 16, 1998.

- Reclamation's Mid-Pacific Regional Director's Letter, Delegation of Regional Functional Responsibilities to the Area Offices – Water Transfers, Number 93-20, December 14, 1993.

Program Parameters

The transfers or exchanges would be subject to the following parameters:

- Transfers or exchanges would occur between CVP contractors in the Sacramento Valley who are conveniently served by existing facilities.

- Transfers would be of the type historically carried out between CVP contractors.

- Transfers greater than 20 percent of a contractor's supply would be publicly noticed by the contractor prior to acknowledgment of such transfer.

- No restriction on directionality; transfers would not require return transfers.

- The ultimate purpose of use could be for irrigation, incidental domestic use, M&I use, groundwater recharge, and/or maintenance of fish and wildlife resources.

- Transfers or exchanges would be completed within a single water year.

- All transfers or exchanges would be between willing sellers and willing buyers.

- Transfers or exchanges must be completed by the last day of February of

the following calendar year from date of initial delivery of transferred or exchanged water.

- Transfers and exchanges, other than those for fish and wildlife purposes, would be limited to 75,000 af total annually, except in drought years when transfers up to 150,000 af per year would be allowed under this program.

- Transfers would be limited to those that do not require new construction or modifications to facilities.

- Transfers would be confined to the existing CVP Permitted Place of Use.

- Transfers would be limited to existing supply and would not increase overall consumptive use.

- Transfers would pertain to CVP water that would have been consumptively used or irretrievably lost to beneficial use during the year of the transfer.

- Transfers for agricultural purposes would be used on lands irrigated within the last 3 years.

- Transfers will not lead to any land conversions.

- Transfers will comply with all Federal, state, local, or Tribal law or requirements imposed for the protection of the environment and Indian Trust Assets.

- Transfers after Water Year 2009 would not be approved by this proposed action. Transfers would comply with the RRA.

- Water for transfer would not be approved for transfer under this program if it would be obtained by shifting to alternative surface water source(s) that could potentially adversely affect CVP operations or other third-party interests.

- Water for transfer must be derived from sources that do not affect rice fields or other GGS habitat.

- Transfer recipients must receive their transferred water through a properly screen point of diversion or a diversion that is isolated from listed fish.

Transfers of the type historically carried out between CVP contractors would mean transfers that occurred within single years and of the type that occurred prior to enactment of the CVPIA between CVP agricultural contractors located within the same geographic areas of the CVP, each of whom had a long-term

contract with Reclamation for CVP water service that allowed for the transfer and/or exchange of CVP water.

Transfer or exchange requests not meeting these criteria, or otherwise not clearly avoiding affects on federally-listed species or natural habitats, would require separate environmental documents prior to approval.

The AWTP would allow Reclamation to simply acknowledge in writing each contractor's advance proposals for transfers that fall within the bounds of existing agricultural practices rather than preparing individual reviews and approval letters for each eligible, routine transfer proposal.

Approvals would require that a predetermination be made of compliance of specified classes of transfers or exchanges with Section 3405(a) of the CVPIA, which authorizes all individuals or districts who receive CVP water under water service or repayment contracts, settlement contracts, or exchange contracts entered into prior to or after the date of enactment of the CVPIA, to transfer all or a portion of their water for improved water management and conservation. The AWTP would allow CVP contractors to provide advance notice to Reclamation and then receive Reclamation's written acknowledgement rather than written approval. This AWTP acknowledgment process would pertain to the types of water transfers carried out before the passage of the CVPIA and any other transfers or exchanges determined to comply with Section 3405(a).

The transfers would be predominantly, if not exclusively, between agricultural users. However, small transfers between urban users or between agricultural and urban users within the Sacramento Valley may fit within the guidelines of this EA, which specify criteria to ensure that approval without further review is not likely to adversely affect listed species or potentially cause other significant environmental changes.

Regulatory Requirements and Required Coordination (Endangered Species Act)

Reclamation has consulted with the U.S. Fish and Wildlife Service (Service) and the National Marine Fisheries Service (NOAA Fisheries) as required by the Endangered Species Act (ESA) for previous water actions such as contract renewals, transfers, and exchanges. Through these consultations, the Service has produced several biological opinions (BO) with terms and conditions that are nondiscretionary for Reclamation. To date, NOAA Fisheries has not required measures over and above those in the BOs applicable to the operation of the CVP as a whole.

Terms and Conditions of the Biological Opinions

To be exempt from the *take* prohibition of the ESA, Reclamation must comply with terms and conditions which are pertinent to future water transfers or exchanges within the CVP. The following terms and conditions implement reasonable and prudent measures and outline mandatory reporting and

monitoring. Reasonable and prudent measures are actions that the Service believes are necessary to minimize impacts, i.e., amount of, or extent of, incidental take. The following terms and conditions are hereby incorporated into this EA as elements of this program:

- Water transfers derived under CVP contracts would be subject to the written consent of the Contracting Officer prior to movement of water.

- Transfers and exchanges may be allowed with any CVP water user for beneficial use provided the transfers or exchanges:

  1. Are consistent with state law, including, but not limited to, provisions of the California Environmental Quality Act (CEQA).

  2. Cause no significant adverse impact on ability to deliver CVP contract water or meet fish and wildlife obligations under the CVPIA because of limitations in conveyance or pumping capacity.

  3. Do not result in a significant reduction in the quantity or quality of water currently used for fish and wildlife.

  4. Comply with the conditions specified below in the proposed action and are otherwise consistent with environmental laws.

- Transfers or exchanges would be executed for 1 year only for any contractor that does not have an established listed species baseline as described in the draft BO on operation and maintenance of the CVP and implementation of the CVPIA.

- Transferred or exchanged water would be approved for delivery and application only to areas that were irrigated within the last 3 years.

- All other nonhistoric CVP transfers and exchanges that do not meet the above criteria would require separate Section 7 or Section 10 authorization.

- Transfers or exchanges would be carried out in coordination with CVP operations such that CVP purposes and objectives are not diminished or limited in any way.

Qualifying Criteria

To qualify under this program, the transfer must comply with the terms and conditions for implementation of reasonable and prudent measures identified in relevant BOs. For this program, in which most of the water will be transferred between properly screened diversions, the measures of greatest concern at this time are the actions that the Service believes necessary to minimize impacts, i.e.,

the amount of, or extent of, incidental take. Therefore, the following requirements are incorporated into this EA:

- Transfers for beneficial use may be made with any California water user provided the following conditions are met:

  1. Transfers would be consistent with state law, including, but not limited to, provisions of the CEQA.

  2. Ability to deliver CVP contract water or meet fish and wildlife obligations under the CVPIA would not be a substantial adverse impact.

  3. A transfer may be authorized under this EA only if it does not result in a significant reduction in quantity or quality of water currently used for fish and wildlife purposes.

- Transfers would be subject to review and approval under various conditions and must be consistent with environmental laws.

- Transfers or exchanges would be executed for 1 year only for any district that does not have an established listed species baseline as described in the draft BO on operation and maintenance of the CVP and implementation of the CVPIA.

- Transferred or exchanged water would be delivered and applied only to areas that were irrigated within the last 3 years.

- Transfers must be carried out in coordination with CVP operations such that CVP purposes and objectives are not diminished or limited in any way.

No Action Alternative

The no action alternative would be continuation of the current transfer/exchange approval process. Reclamation would not expand the Sacramento Valley AWTP and, therefore, would not approve further transfers beyond the 75,000 af limit without individual EAs and their associated consultations under the ESA.

Existing Environment

Introduction

The service areas of the contractors covered by this EA lie on the floor of the Sacramento Valley within Tehama, Glenn, Colusa, Yolo, Butte, and Sutter Counties, a predominantly agricultural region downstream of the temperature compliance points on the Sacramento River and upstream of the Sacramento-San Joaquin Bay Delta.

This section identifies the affected environment, conditions that currently exist, and the issues that may be affected by the proposed action. An initial scoping of potential impacts determined that several environmental issues would not be affected by this action. Therefore, the issues listed in Table 1 have been eliminated from further evaluation in this document. Resource issues listed in Table 2 are evaluated in more detail in this EA because of requirements of previous BOs or executive orders.

TABLE 1. ENVIRONMENTAL ISSUES ELIMINATED FROM DETAILED ASSESSMENT

Climate and Air Quality	Recreation Resources
Soils, Geology and Mineral Resources	Aesthetic Resources
Topography	Hazardous Wastes and Materials
Noise	Public Services (fire, police protection, medical services)
Transportation/Traffic	Public Utilities (wastewater, storm water, solid waste)
Housing	

TABLE 2. ENVIRONMENTAL ISSUES ANALYZED IN THIS EA

Biological Resources and Special Status Species	Indian Trust Assets
Cultural Resources	Environmental Justice

Water Users

Water Service CVP Contractors

The water service contractors in the study area consist primarily of contractors served by the Corning and Tehama-Colusa Canals on the western side of the Sacramento Valley and the Feather Water District located on the eastern side of

the Central Valley. A few small contractors are located in the Stony Creek drainage area.

Water for the Corning Canal and Tehama-Colusa Canal contractors comes from the Sacramento River at the Red Bluff Diversion Dam or rediversions at the Constant Head Orifice on Stony Creek. The total CVP water under contract is 318,700 af. The Corning Canal and Tehama-Colusa Canal service area has a gross acreage of 163,573 acres and 138,378 irrigable acres. The principal crops are almonds, rice, alfalfa, and wheat. The names of the contractors and their contract quantities are listed in Table 3.

Water for the Feather Water District is pumped from the Feather River and replaced by releases from the Shasta Reservoir to replace the consumed water to keep senior water rights holders whole.

Water for the small contractors in the Stony Creek drainage area is taken from Stony Creek with the senior water rights holders being made whole by CVP water stored in the Black Butte Reservoir.

TABLE 3. CORNING CANAL AND TEHAMA-COLUSA CANAL CONTRACTORS

CANAL	ACRE-FEET
Corning	
Corning Water District	23,000
Proberta Water District	3,500
Thomes Creek Water District	6,400
Tehama-Colusa	
4-M Water District	5,700
Colusa County Water District	62,200
Colusa County Water District	5,965
Cortina Water District	1,700
County of Colusa	
Davis Water District	4,000
Dunnigan Water District	19,000
Glenn Valley Water District	1,730
Glide Water District	10,500
Holthouse Water District	2,450
Kanawha Water District	45,000
Kirkwood Water District	2,100
La Grande Water District	2,200
La Grande Water District	5,000
Myers-Marsh Mutual Water Company	255
Orland-Artois Water District	53,000
Westside Water District	65,000

Sacramento River Settlement Contractors

Sacramento River Settlement Contractors are geographically located along the Sacramento River. There are 141 Sacramento River Settlement Contractors, with an annual contract amount of approximately 800,000 af per year. The gross acreage in the Sacramento River service area is 509,249 acres, and the irrigable acreage is 424,928 acres. The principal crops are rice, irrigated pasture, wheat, and walnuts. The Sacramento River Settlement Contractors and their CVP Contract quantities are presented in Table 4.

TABLE 4. SACRAMENTO RIVER SETTLEMENT CONTRACTORS

LONG FORM CONTRACTORS	ACRE-FEET
Anderson-Cottonwood Irrigation District	7,000
Andreotti, H & A Farms	1,560
Baber, Jack, et al.	2,630
Carter Mutual Water Company	672
Conaway Preservation Group, LLC	672
Eastside Mutual Water Company	634
Forry, Laurie	0
Furlan Joint Venture	200
Glenn-Colusa Irrigation District	105,000
Green Valley Corporation	210
Griffin & Prater, TIC	1,150
Henle, John R.	0
Hershey Land Company	450
Hiatt Family Trust	538
Hiatt Family Trust/Illerich Family Trust	212
Hollins, Mariette B.	200
Howald Farms, Inc.	1,410
King, Ben	7
King, Laura	13
Knaggs Walnut Ranches Company	0
Knights Landing Investors, LLC	960
Lockett, William P.	47
Lomo Cold Storage/J. Micheli	700
Maxwell Irrigation District	6,000
MCM Properties, Inc.	610
Mehrhof & Montgomery	40
Meridian Farms Water Company	12,000
Natomas Central Mutual Water Company	22,000
O'Brien, Janice	289
Oji Brothers	1,860
Oji, Mitsue Family Partnership	1,310
Otterson, Mike	300

Pacific Realty Associates, LLC, dba M&T Chico Ranch	976
Pelger Mutual Water Company	1,750
Pleasant Grove-Verona Mutual Water Company	2,500
Princeton-Codora-Glenn Irrigation District	15,000
Provident Irrigation District	5,000
Rauf, Abdul and Tahmina	710
Reclamation District No. 1004	15,000
Reclamation District No. 108	33,000
Reynen, John D., et al.	2,000
Richter Brothers et al.	1,030
River Garden Farms Company	500
Roberts Ditch Irrigation Company	300
Sacramento River Ranch, LLC	0
Sutter Mutual Water Company	56,500
Sycamore Family Trust	9,800
Tarke, Stephen	1,000
Tisdale Irrigation and Drainage Company	2,000
Wilson Ranch Partnership	0
Windswept Land and Livestock	0

SHORT FORM CONTRACTORS

Alexander, Thomas, et ux.	13
Amen, Henry Estate	200
Anderson, Art	45
Anderson, Ray E., et ux.	88
Beckley, Ralph, et ux.	135
Butler, Leslie, et ux.	280
Butte Creek Farms (Arnold)	55
Butte Creek Farms (Mayfair)	8
Butte Creek Farms (Pires)	340
Butte Creek Farms (Yerxa)	16
Cachil Dehe Band of Wintun Indians	100
Chesney, Carson	390
Churkin, Michael, et al.	55
Cummings, Wm.	120
Daniell, Harry	7
Davis, Grover L., et ux.	14
Driscoll Strawberry	490
Driver Family Trust	90
Driver, Gary, et al.	22
Driver, Gregory	14
Driver, John A., et ux.	10
Driver, William, et al.	120
Edson, Wallace and Mary	64
Eggleston, Ronald H., et ux.	12

ELH Sutter Properties	14
Erhke, Allen A., et ux.	160
Exchange Bank (TNC)	570
Fedora, Sib, et al.	20
Furlan, Emile and Simone Family Trust	350
Gillaspy, William	90
Giovannetti, B.E. and Mary	50
Giusti, Richard, et al.	760
Gjermann, Hal	4
Gomes, Frank and Judy	78
Green Valley Corp.	325
Hale & Marks	30
Heidrick, Emmett and Mildred	94
Heidrick, Joe Family Trust	200
Howard, Theodore	2
J.B. Unlimited	290
Jaeger, William, et al.	485
Jansen, Pete and Sandy	40
KLSY, LLC	90
Kary, Carol	600
Lauppe, B. and K.	197
Lauppe, Burton	230
Leiser, Dorothy	24
Leviathan, Inc.	345
Lonon, Michael, et al.	440
Martin, Andrew	130
Micke, Daniel	19
Morehead, Joseph A., et ux.	140
Munson, James T., et ux.	85
Natomas Basin Conservancy	269
Nelson, Thomas L., et ux.	98
Odysseus Farms Partnership	410
Penner, H. H., et ux.	21
Quad H Ranches	310
Redding Rancheria	135
Reische, Eric	53
Reische, Laverne C., et ux.	267
River By Limited	30
Rubio, Exequiel and Elsa	5
Sacramento, County of	230
Schreiner, Joe and Cleo	20
Seaver, Charles	260
Tuttle, Charles	270
Wakida, Masaru, et ux.	410
Willey, Edwin, et ux.	20
Wilson, Dennis, Farms, Inc.	60

Wilson, Neil	16
Wirth, Marilyn Davis	340
Wisler, John Jr.	27
Young, Russell L., et al.	8
ZelMar Ranches	52

Water deliveries to the Sacramento River Settlement Contractors are through the full range of screened, unscreened, or improperly screened diversions. However, the unscreened or improperly screened diversions, while accounting for most of the points of diversion, tend to be small and in the aggregate and accounts for a minority share of the volume of water diverted from the Sacramento River. Most of the transfers are, therefore, likely to be between contractors with properly screened diversions.

Colusa Drain Mutual Water Company

The Colusa Drain Mutual Water Company (CDMWC) lies within the Sacramento Valley and was organized in 1987 to represent the water users diverting water from the Colusa Basin Drain (Drain). There are 81 water users that belong to the CDMWC; these members currently irrigate approximately 16,000 acres. The Colusa Basin has a gross area of approximately 40,000 acres. There are 35,858 irrigable acres within the service area of the Drain, with the principal crops being rice, corn, irrigated wheat, and tomatoes. The CDMWC has a replacement contract with Reclamation for up to 70,000 af of CVP water.

National Wildlife Refuges

The Sacramento National Wildlife Refuge (Sacramento NWR) was established in 1937 and consists of approximately 10,800 acres. The Sacramento NWR is located about 5 miles south of the city of Willows in Glenn and Colusa Counties; provides wintering and resting areas for ducks, geese, and swans; and reduces waterfowl damage to crops on neighboring farms.

The Delevan National Wildlife Refuge (Delevan NWR) was authorized in 1962 and consists of approximately 5,800 acres. The Delevan NWR is located about 7 miles east of Maxwell in Colusa County, midway between the Sacramento NWR and the Colusa National Wildlife Refuge (Colusa NWR). The Delevan NWR provides wintering and resting areas for ducks and geese and reduces waterfowl damage to crops on neighboring farms.

The Colusa NWR was established in 1944 and consists of 4,036 acres. The Colusa NWR is located about one-half mile southwest of Colusa in Colusa County, provides wintering and resting areas for ducks and geese, and reduces waterfowl damage to crops on neighboring farms.

The Sutter National Wildlife Refuge, located in the lower reaches of the Sutter Bypass, is also owned and operated by the Service and forms an adjunct to the complex of hunt clubs in the Butte Sink and Gray Lodge, a nearby state wildlife management area which also service water fowl.

The Sacramento River National Wildlife Refuge, which is still in formation, is comprised of riparian lands along the mainstem and is not currently a user of CVP water.

The Sacramento, Delevan, Colusa, and Sutter NWRs are managed by the Service. Reclamation has a water service contract with the Service for 92,350 af of CVP water. This is the Level 2 water supply as described in the 1989 Report on Refuge Water Supply Investigations. Gray Lodge, which also is entitled to water under the CVPIA, is operated by the State of California.

Biological Resources

The biota of the study area consists mainly of species commonly inhabiting fields planted to row crops, small grains, vineyards, or orchards. Unmanaged lands are essentially restricted to narrow riparian corridors, wildlife refuges, or in the case of Butte County, the lands owned and managed by private hunt clubs, although the latter lie outside the service areas of CVP contractors. Consequently, the species of greatest interest are those listed under the ESA.

A list of the endangered, threatened, and sensitive species that may occur within the Sacramento Valley floor (action area) of Tehama, Glenn, Colusa, Yolo, Butte, and Sutter Counties was obtained from the Service's Endangered Species Lists Web site at http://www.sacramento.fws.gov/es/spp_list.htm and is presented in Table 5.

TABLE 5. FEDERALLY-LISTED SPECIES POTENTIALLY OCCURRING IN THE ACTION AREA COUNTIES

COMMON NAMES	SCIENTIFIC NAMES	STATUS
Animals		
Vernal pool fairy shrimp	*Brachinecta lynchi*	Threatened
Conservancy fairy shrimp	*Brachinecta conservatio*	Endangered
Vernal pool tadpole shrimp	*Lepidurus packardi*	Threatened
Valley elderberry longhorn beetle	*Desmocerus californicus dimorphus*	Threatened
Delta smelt	*Hypomesus transpacificus*	Threatened
Green sturgeon	*Acipenser medirostris*	Threatened
Chinook salmon, winter-run	*Onchorhynchus tshawytscha*	Endangered
Chinook salmon, spring-run	*Onchorhynchus tshawytscha*	Threatened
Steelhead, Central Valley ESU	*Onchorhynchus mykiss*	Threatened
California tiger salamander	*Ambystoma californiense*	Threatened
Giant garter snake	*Thamnophis couchi gigas*	Threatened
Coho salmon, Central CA Coast ESU	*Onchorhynchus kisutch*	Threatened
California red-legged frog	*Rana aurora draytonii*	Threatened
Northern spotted owl	*Strix occidentalis caurina*	Threatened

COMMON NAMES	SCIENTIFIC NAMES	STATUS
Plants		
Hairy Orcutt grass	*Orcuttia pilosa*	Endangered
Slender Orcutt grass	*Orcuttia tenuis*	Threatened
Palmate-bracted bird's-beak	*Cordylanthus palmatus*	Endangered
Hoover's spurge	*Chamaesyce hooveri*	Threatened
Butte County meadowfoam	*Limnanthes floccose ssp. californica*	Endangered
Green's tuctoia	*Tuctoria greenei*	Threatened

Species accounts, habitat requirements, and records of confirmed sightings are based upon a search of the California Natural Diversity Database and are described below.

Animals

Twenty federally-listed threatened or endangered wildlife and plant species are included on the Service's species list for the counties encompassing the study area. Ten of the listed species are known to occur in at least parts of the study area. Each is either an aquatic species or dependent upon aquatic or wetland species. Three of the listed species, the Coho salmon, the delta smelt, and the Northern spotted owl, use habitats, forests, estuaries, and coastal streams, respectively, not found in the action area. One, the Shasta crayfish, is a resident of streams near Shasta Lake, and its range lies outside the study area. Two others, the California red-legged frog and the California tiger salamander, are extirpated from the study area.

Three candidate species potentially occur in the counties containing the service areas of concern. Two of the candidate species, the mountain yellow-legged frog *(Rana muscosa)* and the fisher (Martes pennanti), are restricted to the mountains, well away from the service areas covered by this EA. The third species, the Western yellow-billed cuckoo *(Coccyzus americanus occidentalis)*, occurs in riparian woodlands along the Sacramento River.

Vernal Pool Tadpole Shrimp (Lepidurus packardi)

The vernal pool tadpole shrimp *(Lepidurus packardi)* inhabits vernal pools and swales in the Sacramento Valley containing clear to highly turbid water. The vernal pool tadpole shrimp is known from 18 populations in the Central Valley, ranging from east of Redding in Shasta County to south through the Central Valley to the San Luis National Wildlife Refuge in Merced County and from a single vernal pool complex located on the San Francisco Bay National Wildlife Refuge in the city of Fremont, Alameda County (50 CFR Part 17).

The life history of the vernal pool tadpole shrimp is linked to the seasonal cycle of the vernal pool. After winter rainwater fills the pool, the population is reestablished from cysts that lie dormant in the dry pool sediments. Sexually mature adults have been observed in vernal pools 3 to 4 weeks after the pools had been filled. Some cysts hatch immediately, and the others remain dormant in the soil to hatch during later rainy seasons.

Conservancy Fairy Shrimp (Branchinecta conservatio)
Conservancy fairy shrimp inhabit rather large, cool-water, moderately turbid vernal pools, which generally last until June. Resting fairy shrimp eggs known as cysts are capable of withstanding heat, cold, and prolonged desiccation. When the pools refill, some, but not all, of the cysts may hatch, and the cyst bank in the soil may contain cysts from several years of breeding. Hatching can begin within the same week that a pool starts to fill. Average time to maturity is 49 days. In warmer pools, it can be as little as 19 days.

The historical distribution of the Conservancy fairy shrimp is not known. It is likely the Conservancy fairy shrimp once occupied suitable vernal pool habitats throughout a large portion of the Central Valley and southern coastal regions of California. Currently, it is known from several disjunct populations: the Vina Plains in Tehama County, south of Chico in Butte County; the Jepson Prairie Preserve and surrounding area in Solano County; the Sacramento National Wildlife Refuge in Glenn County; and isolated locations in the San Joaquin Valley and Ventura County.

Vernal Pool Fairy Shrimp (Branchinecta lynchi)
This species inhabits ephemeral, clear-water, rain-filled pools in sandstone and basalt-flow depressions, grassy swales, and other shallow temporary pools. It is widely distributed across the Central Valley from Shasta County to Tulare County and in intermountain valleys of the central and southern Coast Ranges. It also can occur in agricultural furrows on sites of former vernal pools. Like other vernal pool crustaceans, this species has a rapid growth and reproductive cycle timed to the short period of inundation in winter and early spring. The *Branchinecta lynchi* develops more quickly than many other Central Valley fairy shrimp, and the pools this species dwells in are typically shorter-lived than those inhabited by other Central Valley fairy shrimp. They can hatch within a few days after their pools fill with water and reproduce within a few weeks after hatching. The fertilized eggs develop into embryos that form dormant cysts. These cysts are highly resistant to desiccation and temperature extremes and can survive many years in dry pool bottoms. This species is threatened primarily by loss of vernal pool habitat to agriculture and urban development.

Valley Elderberry Longhorn Beetle (Desmocerus californicus dimorphus)
This species occurs in riparian woodland and shrub habitats of the San Joaquin River and other water courses of the Central Valley. It depends entirely on its host plant, the blue elderberry *(Sambucus mexicana)*, which is a common component of the remaining riparian forests and adjacent upland habitats of the Central Valley. The beetle's range extends throughout the valley and surrounding foothills to about the 3,000-foot elevation contour on the east and the watershed of the valley on the west. It prefers mature, stressed elderberry plants 2 to 8 inches in diameter and stems greater than 1 inch in diameter. Its life cycle takes 1 or 2 years to complete. The larvae grow and feed within the stems, trunk, and roots and emerge through characteristic oval-shaped exit holes. Adult emergence is from late March through June, about the same time the elderberry produces

flowers. The species is threatened primarily by destruction of its habitat for agriculture, urban development, and flood control. Its host plant is found at the margins of fields, in borrow pits and inactive ditches, and similar small areas of wet soils throughout the service areas involved in this proposal, but is absent from actively cultivated lands.

Green Sturgeon (Acipenser medirostris)

The green sturgeon is a large, long-lived, but poorly known anadromous fish. It appears to reach a peak of upstream migration in mid-May in the Sacramento River and is known to spawn both above and below the Red Bluff Diversion Dam. The listed Evolutionarily Significant Unit (ESU) appears to spawn primarily in the mainstem of the Sacramento River some distance above Red Bluff, if it arrives before the dam's gates go in for the summer, but the relative importance of the above- and below-the-dam spawning is unknown at this time. Spawning is known to occur in both areas, but the relative success of spawning in the two areas is unknown. Individual sturgeon may spawn several times during its lifetime and appears to have a lifetime of at least several decades. The adults are at no risk of entrainment at a typical agricultural diversion, but it is possible that the juveniles encounter some risk of unknown magnitude.

Delta Smelt (Hypomesus transpacificus)

The delta smelt is a small, euryhaline fish that is endemic to the upper San Francisco estuary, primarily the Sacramento-San Joaquin Delta and Suisun Bay. Delta smelt generally rear in middle estuary areas where fresh water and brackish water mix and move gradually upstream during fall and winter to spawn in the upper delta during spring. Since most delta smelt have a year life cycle, they are particularly susceptible to poor conditions, such as during a drought year. The species is threatened primarily by water diversion for agricultural and urban use.

Chinook Salmon Winter- and Spring-Run (Onchorhynchus tshawytscha)

Four races or runs of Chinook salmon occur in the Sacramento River, with the winter-run being listed as endangered and the spring-run as threatened. The other two runs are candidates for listing. The more vulnerable, early life stages of the two listed runs are generally restricted to the upper reaches of the Sacramento River during the periods when transfers are most likely to occur, but vulnerable stages of one or more of the four runs could be in any segment of the river at any time.

Steelhead-Central Valley ESU (Onchorhynchus mykiss irideus)

Steelhead trout are anadromous, salmonid fish that migrate through Central Valley rivers and creeks enroute to spawning grounds in the Sierra Nevada foothills and mountains. Adult Central Valley steelhead generally begin returning from the ocean to enter fresh water in early fall and hold in downstream areas until flows are high enough in tributaries for spawning. They usually spawn during winter in high gradient, upper reaches of tributaries in cool, well-aerated water. After hatching, steelhead usually stay in fresh water for 1 to 2 years. Juveniles can occupy a variety of in-stream habitats that provide adequate cover,

food supply, and cold water temperatures. The species formerly was much more abundant and widespread in the Central Valley, but historic runs have been all but eliminated by dam construction and water diversions. These activities have blocked steelhead from their historic spawning grounds and have also substantially reduced downstream flows.

California Tiger Salamander (Ambystoma californiense)

The California tiger salamander is a large and stocky terrestrial amphibian with small eyes and a broad, rounded snout that uses both aquatic and upland habitats during its life span. While individuals may survive for more than 10 years, many breed only once; in some populations, less than 5 percent of marked juveniles survived to become breeding adults. The salamander larvae, being among the top aquatic predators in the seasonal pool ecosystem, feed on zooplankton, small crustaceans, and aquatic insects for approximately 6 weeks after hatching, after which they switch to larger prey. The frequent occurrence of midge larvae *(Chironomidae)* in their guts suggests a tendency to feed at or near surficial bottom sediments. Larger larvae have been known to consume smaller tadpoles of Pacific treefrogs *(Hyla regilla)* and California red-legged frogs *(Rana aurora draytonii)* in addition to many aquatic insects. The adult salamander's diet is not well known but may include insects, isopods, mollusks, and worms.

In the Central Valley and surrounding Sierra Nevada foothills and Coast Range, the species occurs from northern Yolo County (Dunnigan) southward to northwestern Kern County and northern Tulare and Kings Counties. The total number of individual California tiger salamanders is not known.

California tiger salamander breeding and aestivation habitat includes vernal pools within an elevation range and perennial ponds and surrounding upland areas in grassland and oak savannah plant communities from sea level to about 1,067 meters (3,600 feet). The survival and viability of this species is directly related to availability of breeding ponds with hydrological and other factors conducive to the salamander's reproduction. Subadult and adult California tiger salamanders spend the dry summer and fall months of the year aestivating in the burrows of small mammals. Once rains begin, they emerge from their burrow at night to feed and migrate to breeding ponds.

Suitable habitat basically consists of vernal pool complexes that hold water long enough for the species to complete the aquatic portion of its life cycle, barrier-free upland habitats adjacent to breeding ponds that contain small mammal burrows, and upland areas between occupied locations that allow for dispersal among water bodies. As such, appropriate habitat is not present in the cultivated lands involved in the proposed transfers nor is it likely to be affected by the transfers.

Giant Garter Snake (Thamnophis couchi gigas)

This aquatic snake inhabits freshwater marshes, low gradient streams, canals, and irrigation ditches in the northern Central Valley as far south as Mendota. During its active season in spring and summer, it occurs predominantly in aquatic habitats

and adjacent, dense marsh and riparian vegetation. From late October to late March, it takes refuge above the high-water line in abandoned rodent burrows and other subterranean refuges. The species formerly had a more widespread latitudinal distribution in the Central Valley. It is threatened by wetland and waterway alteration, development, and exotic fishes.

Bald Eagle (Haliaeetus leucocephalus)

The bald eagle lives along lake shores, reservoirs, rivers, and other large water bodies, which it requires for foraging. It feeds mainly on fish and waterfowl, which may be taken live or scavenged. Bald eagles nest in tall trees, are often found in mixed conifer or ponderosa pine forests, and always near large water bodies. They may also nest in hardwoods, depending on tree size and structure. Nests are usually built at or near the top of mature trees with accessible crowns for takeoff and landing. Snags and dead-topped trees provide perch and roost sites for the nesting birds. Breeding bald eagles in California tend to be year-round residents of their nesting territories, but many birds from out of state, as well as nonbreeding eagles, migrate to and winter in lowlands of California. Bald eagles winter throughout the CentralValley, but are relatively uncommon in the core of the valley. Their populations were reduced primarily by shooting, habitat loss, and poisoning by pesticides, but have recovered substantially in recent years following the ban of the pesticide DDT and other protection efforts. In 1999, the Service proposed delisting the bald eagle.

Plants

Brief summaries are provided below for the nine federally-listed plants included on the Service species list for the study area.

Hairy Orcutt Grass (Orcuttia pilosa)

Hairy Orcutt grass is a densely tufted annual, from 2 to 8 inches tall, and in the grass family *(Poaceae)*. It blooms between May and September and grows exclusively in vernal pool habitats within the Sacramento and San Joaquin Valleys at elevations ranging between 180 to 405 feet. In the San Joaquin Valley, it historically occurred in widely scattered locations within Stanislaus, Madera, and Merced Counties. Hairy Orcutt grass is generally found in vernal pools on stream terraces and alluvial fans.

Slender Orcutt Grass (Orcuttia tenuis)

Slender Orcutt grass occurs in valley grassland and blue oak woodland. It grows in vernal pools on remnant alluvial fans and high stream terraces and recent basalt flows, but has some ability to colonize artificial habitats such as the margins of stock ponds. The primary threat to its existence is human activity that alters the hydrology of vernal pools, including changes in the amount of water or the length of inundation. Several historically known populations have been eliminated by agricultural conversion, airport construction, and wetland draining for mosquito abatement. Twenty-three populations are variously threatened by urbanization, altered hydrology, off-highway vehicles, and competition from nonnative weeds.

The species is restricted to northern California. Scattered, disjunct populations occur in the Sacramento Valley from Siskiyou County to Sacramento County. Most of the 59 native extant populations are in Shasta County and Tehama County. The Service and the Bureau of Land Management manage and protect 12 populations on Federal lands, and the Nature Conservancy protects a population at its Vina Plains (Tehama County) Preserve. Most of the populations on non-Federal lands are not protected.

Palmate-Bracted Bird's-Beak (Cordylanthus palmatus)

Palmate-bracted bird's-beak *(Cordylanthus palmatus)* is a 4- to 12-inches tall, highly branched, annual herb in the snapdragon family *(Scrophulariaceae)*. The stems and leaves are grayish green and sometimes covered with salt crystals excreted by glandular hairs. Seedlings grow in late March or April. Flowers bloom from late spring through summer. It is partially parasitic on the roots of other plants and grows on seasonally flooded, saline-alkali soils in lowland plains and basins at elevations of less than 500 feet. Within these areas, it grows primarily along the edges of channels and drainages, with a few individuals scattered in seasonally wet depressions, alkali scalds (barren areas with a surface crust of salts), and grassy areas.

Historically, the species is known from scattered locations in Yolo and Colusa Counties in the Sacramento Valley and is currently known to occur in seven locations in the Sacramento, Livermore, and San Joaquin Valleys. In the Sacramento Valley, these are the Sacramento NWR in Glenn County, the Delevan NWR and the Colusa NWR in Colusa County, and the Woodland area. The total occupied surface area over the seven locations is estimated at less than 741 acres.

Saline-alkali soils and alkali sink scrub habitats were historically rare in central California, and those few that did exist have been greatly reduced by soil reclamation and draining of seasonal wetlands, conversion of land to agricultural use, urbanization, livestock grazing, and more recently by off-road vehicle use and trash dumping. The rarity of saline-alkali soils with natural vegetation and the intensive agricultural and urban development within the species' range make the likelihood of finding additional colonies remote.

Hoover's Spurge (Chamaesyce hooveri)

Hoover's spurge *(Chamaesyce hooveri)*, also known as Hoover's sanmat, is a prostrate, tap-rooted, annual herb in the spurge family *(Euphorbiaceae)*. It forms mats from a few inches to a few feet across.

The flowering structure in Hoover's spurge has petal-like glands that are red to olive in color. Blooms appear in July. It grows in relatively large, deep vernal pools among the rolling hills, remnant alluvial fans, and depositional stream terraces at the base of the Sierra Nevada foothills. The main remaining area of concentration for Hoover's spurge is in the northeastern Sacramento Valley. The Vina Plains of Tehama and Butte Counties contains 14 (53.8 percent) of the 26 known extant occurrences. One other Sacramento Valley site is near Chico in

Butte County, and three occurrences are on the Sacramento NWR in Glenn County.

Butte County Meadowfoam (Limnanthes floccosa ssp. California)
Butte County meadowfoam occurs along the edges of vernal pools and ephemeral streams and occasionally around the edges of isolated vernal pools. It generally occurs on level to gently sloping terrain on poorly drained soils with shallow soil layers impermeable to water infiltration. It thrives in waterlogged soils and tolerates periodic submergence.

Restricted to a narrow 25-mile strip along the eastern flank of the Sacramento Valley from central Butte County to the northern portion of the city of Chico, the range has not changed significantly from historical times. The 11 known populations are threatened primarily by urban development in and around Chico in Butte County.

Greene's Tuctoria (Tuctoria greenei)
Greene's tuctoria is a tufted annual grass, 2 to 6 inches tall, in the grass family (Poaceae). It is documented from elevations between 110 to 440 feet and blooms between May and July. It often grows in shallower vernal pools, which dry in April or early May. Greene's tuctoria historically occurred in the Sacramento and San Joaquin Valleys.

Cultural Resources

The Sacramento Valley supported extensive populations of Native Americans in the prehistoric period, with the more permanent settlements in the foothills and hunting camps on the valley floor. After Spanish and Mexican incursions in the early nineteenth century, coupled with the introduction of European-born epidemics, Native American populations declined and became culturally extinct in the Sacramento Valley by the mid-nineteenth century. Cultural resources would have been relatively modest in much of the area now irrigated, as these lands were originally marshes used primarily for hunting, not residences, but the conversion of land and intensive farming practices over the last century has probably destroyed much of what was present within the upper 8 to 10 inches of the soil. Deeper lying resources, if present, can generally be expected to be intact in much of the study area.

Indian Trust Assets

Indian Trust Assets are legal interests in property or rights held in trust by the United States for Indian Tribes or individual Native Americans. Trust status originates from rights imparted by treaties, statutes, or executive orders. Such assets cannot be sold, leased, or otherwise alienated without Federal approval. Indian reservations, rancherias, and allotments are common Indian Trust Assets. Allotments are parcels of land held in trust for specific individuals that may be located outside reservation boundaries. Additionally, such assets include the right to access certain traditional areas and perform traditional ceremonies.

The principal trust assets in or near the service areas involved in this program of transfers are the casinos and rancherias near the towns of Redding, Corning, and Colusa and the village of Elk Creek.

Environmental Justice

The environmental context and setting of this EA is restricted to lands within the service areas of CVP contractors in the Sacramento Valley, a region characterized mainly by widely spaced small towns and rural populations. Any area outside of this place of use is not included in this analysis and will not receive water from this proposed action.

Executive Order 12898 requires that all Federal agencies address, as appropriate, disproportionately high and adverse human health or environmental effects of its programs, policies, and activities on minority populations and low-income populations in the United States and its territories.

Environmental Consequences

Hydrology and Water Quality

No Action Alternative

The no action alternative might result in greater groundwater use, but the effects would be small given the status of the groundwater supplies in the Sacramento Valley. Ground waters in the service areas supplying water for this transfer are generally plentiful, and the aquifers are not overdrafted, with the exception of a small area near Davis in Yolo County.

Reclamation's Proposed Action Alternative

The transfer program would tend to reduce the need for use of groundwater, but groundwater supplies in the Sacramento Valley are generally not in overdraft status, and withdrawals appear to be replenished rapidly. Therefore, any effects of reduced groundwater use would generally be negligible.

Biological Resources

No Action Alternative

The no action alternative will result in either no change or continued case-by-case transfers and exchanges of water. If the former were true, there would be no impacts to fish and wildlife, listed species, or critical habitat. If the latter were true, the impacts would be similar to those described under the proposed action.

Reclamation's Proposed Action Alternative

Under the proposed action, transferred water would be used to temporarily make up for timing delays or shortages in supply. The limited duration of this supply precludes its use as a reliable source of water. Therefore, there would be no loss of native habitat for wildlife species as conversion of native land into agricultural use requires a reliable water supply. There would, therefore, be no affect to listed species or critical habitat from land use changes.

The restriction of the program to lands that have been cultivated within the 3 years immediately prior to use of transfer and exchange water means that lands likely to have specialized habitat for listed species are likely to be excluded from this program of transfers. Lands used for foraging by such species could be affected, but no net change in the quantity of such lands is expected valley wide, and local changes are expected to be minor.

Similarly, most of the transfers can be expected to involve transfers from settlement contractors to water service contractors who are more prone to reductions in supply or from one contractor on the Tehama-Colusa Canal to another contractor served by the canal. Hence, the transfers are not likely to involve transfers to users served by properly screened diversions, preventing adverse affects on listed fish species.

This action is expected to have no affect on listed fish in the project area and is unlikely to adversely affect species other than fish.

Indian Trust Assets

No Action Alternative

The no action alternative will not alter the manner in which water is delivered to Indian Trust Assets and, as such, will have no impact on Indian Trust Assets within the scope of this action.

Reclamation's Proposed Action Alternative

The proposed action will not alter the manner in which water is delivered to Indian Trust Assets and, as such, will have no impact on Indian Trust Assets within the scope of this action.

Social Resources

No Action Alternative

Some changes to existing social resources could occur under the no action alternative as a consequence of crop losses for lack of water at key times. Affects of any one transfer would probably be small, but the cumulative affect could be important to local economies.

Reclamation's Proposed Action Alternative

The proposed action would tend to stabilize local economies. The affect may be small, but would tend to be positive.

Environmental Justice

No Action Alternative

There would be no disproportionate affect on any social group because of an action, but the benefits of a transfer might be particularly important to those with the fewest resources.

Reclamation's Proposed Action Alternative

The proposed action would help keep crops alive in droughts and indirectly help farm-dependent workers even in wet years by supporting the viability of the enterprises which employ them. The net effect would be to help sustain employment, with the greatest benefits perhaps going to the workers in the lower-paying jobs.

Consultation and Coordination

No consultation was required under the ESA for upland species or marsh-dwelling/riverine species such as the GGS, because the criteria for coverage under this program exclude any actions that rely on water sources that may affect GGS habitat or which involve changes in cropping practices or land clearance, which might affect other listed species such as the Valley Elderberry Longhorn Beetle.

Similarly, no consultation was required for aquatic species, given the requirement that the water recipients must receive their water by means which preclude affects on listed fish. This might be accomplished by use of appropriate fish screens or by use of diversions, which are upstream of impassable dams.